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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/534,176

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EXAMINER

PEPITONE, MICHAEL F

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,176	Applicant(s) MALETZ ET AL.	
	Examiner MICHAEL PEPITONE	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 May 2008 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/27/09 has been entered.

Specification

The disclosure is objected to because of the following informalities: A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74 [See MPEP § 608.01(f)]. Appropriate correction is required.

Drawings

The drawings are objected to because the figure numbers are not present in the drawing (in English). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the

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remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones *et al.* (US 2002/0193463); or Jones *et al.* (US 2002/0193463) in view of Heindl *et al.* (US 5,852,096).

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Regarding claims 1, 11, and 17: Jones *et al.* teaches a filler for dental composite materials (§ 1-2, 9-10) comprising a polymerizable organic binder and a filler in a quantity of 5-35 weight% (§ 65-68), wherein the filler particles are obtained by spray drying and have the shape of a doughnut {torus} with an average external diameter of 0.2 μm to 20 μm {with a mean size of 5 μm } [instant claims 1, 11, and 17] (§29, 58); the filler particles undergo a heat treatment process at a temperature of about 600 °C {for about 24 h}, which completes the formation of holes within the discs and allows the smooth ovoid or round doughnut shaped particles to provide a lower residual stress within the matrix resin following polymerization (§ 59).

Jones *et al.* does not teach post-curing the particles at a temperature of 800 – 1200 °C. However, the Office takes Official Notice that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP 2144.05]. At the time of invention a person of ordinary skill in the art would have found it obvious to have optimized the furnace temperature, as taught by Jones *et al.*, as commonly practiced in the art, and would have been motivated to do so since the conversion of silica gel into silica glass, as well as the formation of holes in the discs of the composition is influenced by the temperature of the furnace.

Alternatively, Jones *et al.* does not teach post-curing the particles at a temperature of 800 – 1200 °C. However, Heindl *et al.* teaches silicon dioxide based filler for dental materials (1:5-10) wherein the filler is fired at 500 to 1000 °C after drying in order to reduce the percentage of silanol groups on the surface (3:5-15). Jones *et al.* and Heindl *et al.* are analogous art because

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they are concerned with a similar technical difficulty, namely the preparation of silicon dioxide based filler for dental materials. At the time of invention a person of ordinary skill in the art would have found it obvious to have combined firing at a temperature of 500 to 1000 °C after drying, as taught by Heindl *et al.* in the invention of Jones *et al.*, and would have been motivated to do so since Heindl *et al.* suggests that the firing provides a reduced percentage of silanol groups on the surface of the filler, yielding cured dental composites characterized by good mechanical properties, smooth surfaces, and very little wear on the dental antagonist (3:5-15).

Regarding claims 2-3: Jones *et al.* teaches a filler for dental composite materials comprising a polymerizable organic binder and a shaped filler in a quantity of 5-35 wt% {75-80 wt% total} (¶ 65-68), wherein the filler particles are obtained by spray drying and have the shape of a doughnut {torus} [instant claims 3] with an average external diameter of about 0.2 µm to 20 µm {with a mean size of 5 µm} [instant claim 2], further comprising a silica sol {SiO₂ particles dispersed in polymerizable resin} (¶ 1-2, 9-10, 29, 58, 68).

Regarding claims 4 and 14: Jones *et al.* teaches a shaped filler {torus} in a quantity of 5-35 wt% {75-80 wt% total filler} (¶ 65-68), with examples containing 62 wt% of doughnut shaped particles [instant claims 4 and 14] (¶ 55-56, table 4).

Regarding claims 5-7: Jones *et al.* teaches the filler contains additional fragment shaped and/or spherical shaped inorganic filler particles [instant claim 5] (¶ 31, 25-26, 55), specifically fumed silica [instant claim 6] (¶ 68) or spherical silica obtained by a silica sol [instant claim 7] (¶ 65).

Regarding claim 8: Jones *et al.* teaches the doughnut {torus} shaped filler particles are silanized (¶ 64).

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Regarding claims 9-10: Jones *et al.* teaches the binder includes ethylenically unsaturated monomers and oligomers {bis-GMA, TEGDMA} [instant claim 9] (§ 66, 68), curable chemically and/or photochemically [instant claim 10] (§ 66, 68).

Regarding claims 12-13: Jones *et al.* teaches the basic claimed composition [as set forth above with respect to claim 1].

Jones *et al.* does not teach an internal diameter of the torus-shaped filler of 0.2-20 μm [instant claim 12] or 0.2-20 μm [instant claim 13]. However, the Office takes Official Notice that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP 2144.05]. At the time of invention a person of ordinary skill in the art would have found it obvious to have optimized the internal diameter, as taught by Jones *et al.*, as commonly practiced in the art, and would have been motivated to do so since the capability of the ceramic filler to mechanically lock into the resin matrix of the composition is influenced by the shape of the filler.

Regarding claims 15-16: Jones *et al.* teaches the filler particles comprise silicon dioxide and/or heavy metal oxides [instant claim 15] (§ 31-48), specifically zirconium oxide, barium oxide, and strontium oxide [instant claim 16] (§ 31-48, 66, 68).

Claims 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones *et al.* (US 2002/0193463); or Jones *et al.* (US 2002/0193463) in view of Heindl *et al.* (US 5,852,096).

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Regarding claim 18: Jones *et al.* teaches a filler for dental composite materials (§ 1-2, 9-10) comprising a polymerizable organic binder and a filler in a quantity of 5-35 weight%, wherein the filler particles are obtained by spray drying and have the shape of a doughnut {torus} with an average external diameter of about 5 µm and 15 µm (29, 58, 65-68); the filler particles undergo a heat treatment process at a temperature of about 600 °C {for about 24 h}, which completes the formation of holes within the discs and allows the smooth ovoid or round doughnut shaped particles to provide a lower residual stress within the matrix resin following polymerization (§ 59).

Jones *et al.* does not teach post-curing the particles at a temperature of 800 – 1200 °C. However, the Office takes Official Notice that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) [MPEP 2144.05]. At the time of invention a person of ordinary skill in the art would have found it obvious to have optimized the furnace temperature, as taught by Jones *et al.*, as commonly practiced in the art, and would have been motivated to do so since the conversion of silica gel into silica glass, as well as the formation of holes in the discs, is influenced by the temperature of the furnace, which allows the smooth ovoid or round doughnut shaped particles to provide a lower residual stress within the matrix resin following polymerization (§ 59).

Alternatively, Jones *et al.* does not teach post-curing the particles at a temperature of 800 – 1200 °C. However, Heindl *et al.* teaches silicon dioxide based filler for dental materials (1:5-10) wherein the filler is fired at 500 to 1000 °C after drying in order to reduce the percentage of silanol groups on the surface (3:5-15). Jones *et al.* and Heindl *et al.* are analogous art because

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they are concerned with a similar technical difficulty, namely the preparation of silicon dioxide based filler for dental materials. At the time of invention a person of ordinary skill in the art would have found it obvious to have combined firing at a temperature of 500 to 1000 °C after drying, as taught by Heindl *et al.* in the invention of Jones *et al.*, and would have been motivated to do so since Heindl *et al.* suggests that the firing provides a reduced percentage of silanol groups on the surface of the filler, yielding cured dental composites characterized by good mechanical properties, smooth surfaces, and very little wear on the dental antagonist (3:5-15).

Jones *et al.* does not specifically teach a method of filling cavities in teeth with the material. However, at the time of invention a person of ordinary skill in the art would have found it obvious to have filled cavities in teeth based on the invention of Jones *et al.*, and would have been motivated to do so since Jones *et al.* suggests that the composition is useful as a dental filling material (¶ 1, 27, 68), and is an equivalent alternative means of providing a method of filling teeth with a dental filling material.

Response to Arguments

Applicant's arguments filed with the amendment entered with the RCE have been fully considered but they are not persuasive. The rejection of claims 1-18 based on Jones *et al.* (US 2002/0193463) is maintained for reason of record and following response.

Jones *et al.* (US '463) teaches a filler for dental composite materials (¶ 1-2, 9-10) comprising a polymerizable organic binder and a filler in a quantity of 5-35 weight% (¶ 65-68), wherein the filler particles are obtained by spray drying and have the shape of a doughnut {torus} with an average external diameter of about 0.2 µm to 20 µm {with a mean size of 5 µm} (¶ 29, 58); the filler particles undergo a heat treatment process at a temperature of about 600 °C

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{for about 24 h}, which completes the formation of holes within the discs and allows the smooth ovoid or round doughnut shaped particles to provide a lower residual stress within the matrix resin following polymerization (§ 59). Jones *et al.* (US '463) specifically discloses the doughnut shaped particles have smooth surfaces (§ 59). Furthermore, Figures 1-4 appear to show the smooth surfaces of the doughnut shaped particles (§ 10-13).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies i.e., filler particles that having smooth surfaces are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pepitone whose telephone number is 571-270-3299. The examiner can normally be reached on M-F, 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on 571-272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MFP
29-April-09

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796